

## Morel fat lady

**Review by Fernando Andrette, CAVI Magazine, Brazil.**

In a high-end project, the quest for the cabinet is indeed one of the toughest to overcome. I believe that all the formulas within reach of the engineers have already been tested. The several options range from the use of lead, aluminium or MDF sheets; sophisticated designs, fancy internal bracings, carbon fibre up to plainly opting out from any cabinet at all, as in the case of the Jamo R 907, reviewed in edition 157.

The cabinet will obviously be part of the speaker's final sonority and, just as much as the issue of acoustically treating listening rooms, it may pose a problem of difficult solution. It is evident that the materials currently available have made this problem much smaller, but this is still a tough question nonetheless.

The last couple years has seen engineers beginning to study new designs, replacing traditional cabinets with new, rounder designs, like the B&W Nautilus, with its snail-like shell, or the more ancient Tag McLaren, the uppermost part of which was reminiscent of the Pisa Tower. Currently, beside the still produced Nautilus, Vivid Audio also invests in a differentiated design, resembling a drop of water.

Along comes Morel with their sinuously shaped fat lady. For me and my son, they were more akin to a stylized cello than to a big-breasted woman, but what really counts is that they will never go unnoticed by their finish – which is flawless!

Morel was founded in 1974 by Meir Mordechai, one of the first importers of high-end equipment in Israel. Mr. Mordechai built his fame exactly for managing to put great systems together for his clients. It did not take long for him to decide to form his own company, and founded Morel. The market recognition did not take long, and within the company's first decade he already exported his drivers to dozens of countries, belting countless international awards.

His son Oren leads the company's R&D team, inspiring them to develop new products that are truly revolutionary. It was from such a challenge that the fat lady, the winner of the CES 2009 Award for Design and Engineering Innovation, came to be

Behind the technical development of the fat lady is Russell Kaufmann, Morel's Chief Electronic Engineer. Russell has a long history in the high-end industry, having been associated with B&W, Wharfedale and Monitor Audio. Five years ago Oren and Russel decided to develop a loudspeaker with unique design and physical structure. They were later joined by Alain Fourax – a Dutch architect responsible for striking designs in several areas – and David Zuman – an Israeli specialist in the integration of digital and analogue technologies.

The fat lady's cabinet is built with a compound of fibreglass, carbon fibre and resin. The careful composition of these materials resulted in a relatively light yet very strong cabinet. The flexibility of this composite material has allowed Morel to produce the curves that serve the sonic qualities goals, without any parallel surface, thus avoiding any standing waves inside the cabinet.

The drive units positioning within the cabinet is done in such a fashion as to solve acoustical problems. Therefore, the cabinet thins out in the tweeter and midrange driver area. For the lower frequencies section, the two nine-inch units are laid apart from each other. All this care with the form and the cabinet construction material served just one objective: to have the fat lady to behave like a musical instrument would. To help achieve this, no type of deadening material was used inside the speaker.

The drive units were also specially developed for the fat lady. The six-inch midrange driver's cone is actually a sandwich of two outer carbon fibre skins and an inner thin core of Rohacell. According to the manufacturer, this new driver is capable of a superb response up to 15 KHz - So much so that it could be used as the only full range driver in an adequately designed project!

The voice coils of the midrange and woofer are three inches high, and wrought in Hexatech aluminium. Whatever the power level, they remain constantly inside the magnetic field, and the drivers sport a copper can for impedance control purposes. The design is complemented by a hybrid neodymium-ferite magnet. The nine-inch bass drivers share much of the technology employed by the midrange, the differences being the absence of the copper can

– unnecessary for low frequency applications – and the voice coil, which is of the “overhang” kind, employed to provide the necessary strength to impel the cone.

The tweeter employed is the renowned Supreme with one sole modification – the absence of ferrofluid voice coil coolant. The magnet is a pancake neodymium set, and the soft dome is hand coated with Accuflex.

The crossover is an extremely critical element in any high-end project. To achieve the established goals, countless listening tests were necessary, and they led to the following decisions:

- To connect all the drive units in positive phase, as it was desirable to preserve timing (the famous feet-tapping to the music’s rhythm).
- To preserve phase as best as possible through the crossover points, and to avoid any resistors in the signal path.

The iron-core inductors of the low frequency section were made in the United Kingdom especially for Morel, and these coils have a DC resistance 90% lower than their equivalents with air core. An 18 dB/Octave filter adjusted in 200 Hz was included (in the signal path). The midrange section has a decay of 12 dB/Octave in the lower region and 24 dB/Octave in 2.2 kHz. For the tweeter, the crossover employs a 12 dB/Octave circuit with an unaligned Zobel network, which simultaneously adjusts the impedance curve and modifies the tweeter’s acoustic level. This allows for attenuation to be applied in the tweeter without employing any resistors in the signal path. The only component in the tweeter signal path is a Mondorf Supreme capacitor. The low frequency filter is located in the speaker base, while the mid/high range section is tucked inside the cabinet, in an area that does not affect either the speakers or the crossover.

The fat lady only allows for mono-cabling, and its speaker connectors are of excellent quality (of a kind so far unknown to me). The base follows the cabinet’s design, and the spikes are also top notch quality.

The fat lady concept allows for several options of positioning in the listening room. They are capable of producing a balanced sound with distances as short as just half meter from the back wall. For the best performance, the manufacturer recommends that the speakers be separated by not more than 2/3 of the distance from the listener, and a maximum toe-in of 5 degrees. The tweeters should never be aimed directly towards the listening position (the sweet spot).

This is a bass reflex enclosure (and it took me a while to locate the duct, which is placed – or rather well hidden - right under the lowest woofer) with a sensitivity of 88 dB (in his review of the fat lady in the magazine Audio Portuguesa, Jorge Goncalves mentioned a sensitivity of 86 dB, which left me confused, once Jorge is extremely cautious when it comes to technical information). The frequency response goes from 28 Hz to 32 kHz +/- 3 dB, and the nominal power rating is 300 watts.

The manufacturer does not mention anything about burn-in time. Our experience has shown that the fat lady needs at least 200 hours of burn-in (while we noticed meaningful improvements in the mid/highs when it reached the 300-hour mark). Thus, dear reader, if you get hooked by the fat lady after auditioning them at the (upcoming Rio de Janeiro) Hi-End Show, be prepared for at least 300 hours of use before you can enjoy all her charms.

In our room the fat lady was positioned at 1.7 m from the back wall and 1.1 m from the side walls, with a toe-in of 10 degrees (in the open test) and 5 degrees in the individual critical audition. I explain: once an attendance of five to six persons is common in our open tests, a toe-in of only five degrees would leave those persons outside the central area with a diffuse soundstage and overly directed highs. The distance between the speakers was 3.8 m (measured from the centre of the tweeter).

The fat lady is extremely demanding regarding speaker cables. Never, ever use pure silver cables with them. The ideal is a good OFC copper or, if need be, a silver plated copper cable. Our trials with silver were catastrophic, as the mid/highs resulted extremely distressing (even after all the burn-in).

Once well adjusted in the room, the speakers disappear, feeding you with just the music. Their exceptional ‘timing’ indeed induces the listener to foot tapping. I and my son made a historical audition of the “Men With The Blue Painted Faces” (\*) where we were unable to draw our eyes off the imaginary sound stage. The fat lady enjoys being challenged, and feels well at easy

with any musical genre. When the room allows, the fat lady establishes the ideal listening volume for each track, as if it really were a musical instrument at the service of the electronic reproduction.

Regarding Tonal Balance, the fat lady is quite open, enormously lively and transparent. Its lower end moves huge volumes of air, is precise and has a great decay.

The middle range allows a full apprehension of the musical event, without any additional effort. There is a perfect materialization of the instruments and voices, thanks to its outstanding outlining, focus and, of course, the degree of detailing of their midrange drivers.

The highs have excellent extension, with a very soft decay speed. After we opted for the OFC copper cable (Transparent Audio Reference XL SS), the highs went one large step higher. Their sensitivity demands amplifiers capable of putting out high current and good power (we have tested the fat lady with MBL's 7008 integrated and also with this manufacturer's monoblocs, the 9008A). Doing it otherwise will mean, I believe, losing the beauty of the air displacement by the low-end drivers and the speaker's enormous velocity.

The fat lady's soundstage is of first order in all three dimensions: depth, width and height. It enables the listener to tell layer after layer of an orchestral piece, as well as to notice precisely the positioning of every musician in the imaginary sound stage.

Ambience was the only topic of our reviewing methodology that changed according to the recording quality and the positioning of the speakers in the room. Our attempts at getting them closer to the back wall led to a noticeable loss of ambience (thence our choice of placing them over a meter away from the back wall in the open test).

Their transients are killer - the guests of the open test could listen to the first movement of Beethoven's Piano Sonata #23, and were able to follow the pianist's left and right hands effortlessly - literally breathtaking!

The Harmonic Body was also presented correctly, as well as the feeling of physical materialization of the musical event, when reproducing top notch recordings.

## **CONCLUSION**

I would like to point out that the fat lady was privileged when it comes to the selection of equipment at our disposition along this review: three preamps (Accuphase 2810, dartZeel NHB 18 NS and Pass Labs XP-10). With all of them it was able to portray their different sonic signatures satisfactorily. As with any high-end speaker, the fat lady needs to be matched by a system up to its standard. Its main advantages are the ease with which it adapts to different listening rooms (without acoustic treatment). In the latest Audio Show in Portugal they played at only .5 m from the back wall, and even then the soundstage was magnificent!

As I wrote before, but it is never enough to emphasize, the fat lady will demand two things to achieve their best performance: good quality, OFC speaker cables, and a power amp with suitable output (at least 100 Wrms for a 24sq.m. room) and high current. Such precautions will enable music with weight, rhythm and precision.

Also try to avoid overly bright or open sounding CD players, and do prefer neutral sounding preamps. This is all they need to show all their tremendous potential. Its liveliness is contagious, and I believe that those who enjoy higher levels of volume will be surprised at how they love to be put to the test!

Do not miss the opportunity of auditioning them at the upcoming High-End Show because, as the saying goes, "it is not over until the fat lady sings".

(\*) The author's son is still very young, and that is how he refers to the "Blue Man" Group (n.t.)  
English translation by Aharon D. Konforti